

Docket No.: 22116-00005-US5  
(PATENT)

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Patent Application of:  
Christine L. O'Day et al.

Application No.: 09/713,512

Confirmation No.: 4513

Filed: November 14, 2000

Art Unit: 1621

For: NOVEL POLYAMINE ANALOGUES AS  
THERAPEUTIC AND DIAGNOSTIC  
AGENTS

Examiner: P. G. O'Sullivan

**INFORMATION DISCLOSURE STATEMENT (IDS)**

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Dear Sir:

Pursuant to 37 CFR 1.56, 1.97 and 1.98, the attention of the Patent and Trademark Office is hereby directed to the references listed on the attached PTO/SB/08. It is respectfully requested that the information be expressly considered during the prosecution of this application, and that the references be made of record therein and appear among the "References Cited" on any patent to issue therefrom.

This Information Disclosure Statement, pursuant to 37 CFR 1.114(c), accompanies the Request for Continued Examination (37 CFR 1.114) submitted herewith.

In accordance with 37 CFR 1.97(g), the filing of this Information Disclosure Statement shall not be construed to mean that a search has been made or that no other material information as defined in 37 CFR 1.56(a) exists. In accordance with 37 CFR 1.97(h), the filing of this Information Disclosure statement shall not be construed to be an admission that any patent, publication or other information referred to therein is "prior art" for this invention unless specifically designated as such.

It is submitted that the Information Disclosure Statement is in compliance with 37 CFR 1.98 and the Examiner is respectfully requested to consider the listed references.

The Director is hereby authorized to charge any deficiency in the fees filed, asserted to be filed or which should have been filed herewith (or with any paper hereafter filed in this application by this firm) to our Deposit Account No. 22-0185, under Order No. 22116-00005-US5.

Dated: March 1, 2006

Respectfully submitted,

By 

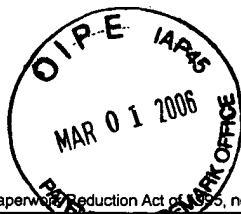
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U.S. PATENT DOCUMENTS					
Examiner Initials*	Cite No. <sup>1</sup>	Document Number Number-Kind Code <sup>2</sup> (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear

FOREIGN PATENT DOCUMENTS						
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\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. <sup>1</sup> Applicant's unique citation designation number (optional). <sup>2</sup> See Kinds Codes of USPTO Patent Documents at [www.uspto.gov](http://www.uspto.gov) or MPEP 901.04. <sup>3</sup> Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). <sup>4</sup> For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. <sup>5</sup> Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. <sup>6</sup> Applicant is to place a check mark here if English language Translation is attached.

NON PATENT LITERATURE DOCUMENTS			
Examiner Initials	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T <sup>2</sup>
	CA	Albanese, L., et al., "Investigations of the Mechanism by which Mammalian Cell Growth is Inhibited by N <sup>1</sup> N <sup>12</sup> -Bis(ethyl)spermine," BIOCHEM. J., (1993) 291:131-7	
	CB	Ask, A., et al., "Increased Survival of L1210 Leukemic Mice by Prevention of the Utilization of Extracellular Polyamines. Studies Using a Polyamine-Uptake Mutant, Antibiotics and a Polyamine-Deficient Diet," CANCER LETT., (1992) 66:29-34.	
	CC	Bergeron, R.J., et al., "Antiproliferative Properties of Polyamine Analogues: A Structure-Activity Study," J. MED. CHEM., (1994) 37:3464:76.	
	CD	Bergeron, R.J., et al., "Reagents for the Stepwise Functionalization of Spermine," J. ORG. CHEM (1988) 53: 3108-11.	
	CE	Bergeron, R.J., et al., "Total Synthesis of (+) -15-Deoxyspergualin," J. ORG. CHEM., (1987) 57:1700-3.	
	CF	Bergeron, R.J. et al., "A Comparison of Structure-Activity Relationships between Spermidine and Spermine Analogue Antineoplastics," J. MED. CHEM., (1997) 40: 1475-94.	
	CG	Bhaskar Kanth, J.V., et al., "Selective Reduction of Carboxylic Acids into Alcohols Using NaBH <sub>4</sub> and I <sub>2</sub> ," J. ORG. CHEM., (1991) 56: 5964-5.	
	CH	Blagbrough, I.S., et al., "Practical Synthesis of the Putative Polyamine Spider Toxin FTX: a Proposed Blocker of Voltage-Sensitive Calcium Channels," TETRAHEDRON LETT., (1994) 35 (13): 2057-60.	
	CI	Booth, R.J., et al., "Polymer-Supported Quenching Reagents for Parallel Purification," J. AM. CHEM. SOC., (1997) 119: 4882-6.	
	CJ	Borch, R.F., et al., "The Cyanohydrinborate Anion as a Selective Reducing Agent," J. AM. CHEM. SOC., (1971) 93 (12): 2897-2904.	
	CK	Brand, G., et al., "Cyclopolyamines: Synthesis of Cyclospemidines and Cyclospemines, Analogues of Spermidine and Spermine," TETRAHEDRON LETT., (1994) 35(46): 8609-12.	
	CL	Bray, A.M., et al., "Simultaneous Multiple Synthesis of Peptide Amides by the Multipin Method. Application of Vapor-Phase Ammonolysis," J. ORG. CHEM., (1994) 59:2197-2203.	
	CM	Brown, H.C., et al., "Solvomercuration-Demercuration. I. The Oxymercuration-Demercuration of Representative Olefins in an Aqueous System. A Convenient Mild Procedure for the	
Examiner Signature			Date Considered



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		Markovnikov Hydration of the Carbon-Carbon Double Bond," J. ORG. CHEM., (1970) 35(6): 1844-50.	
	CN	Byk, G., et al., "One Pot Synthesis of Unsymmetrically Functionalized Polyamines by a Solid Phase Strategy Starting from their Symmetrical Polyamine-Counterparts," TETRAHEDRON LETT., (1997) 38(18): 3219-22.	
	CO	Casero Jr., R.A., et al., "High Specific Induction of Spermidine/Spermine N1-Acetyltransferase in a Human Large Cell Lung Carcinoma," BIOCHEM. J., (1990) 270:615-20.	
	CP	Chaplinski, V., et al., "A Versatile New Preparation of Cyclopropylamines from Acid Dialkylamides," ANGEW. CHEM. INT. ED. ENGL., (1996) 35(4): 413-4.	
	CQ	Dempcy, R.O., et al., "Design and Synthesis of Ribonucleic Guanidine: A Polycationic Analog of RNA," PROC. NATL. ACAD. SCI. U.S.A., (1996) 93:4326-30.	
	CR	Devraj, R., et al., "A Versatile Solid Phase Synthesis of Lavendustin A and Certain Biologically Active Analogs," J. ORG. CHEM., (1996) 61:9368-73.	
	CS	Fleming, S.A., "Chemical Reagents in Photoaffinity Labeling," TETRAHEDRON, (1995) 51(46): 12479-520.	
	CT	Furka, A., "General Method for Rapid Synthesis of Multicomponent Peptide Mixtures, INT.J. PEPTIDE PROTEIN RES., (1991) 37:487-93.	
	CU	Gallop, M.A., et al., "Applications of Combinatorial Technologies to Drug Discovery. Background and Peptide Combinatorial Libraries," J. MED. CHEM., (1994) 37(9): 1233-51.	
	CV	Ganem, B., "New Chemistry of Naturally Occuring Polyamines," ACC. CHEM. RES., (1982) 15:290-8.	
	CW	Ganem, B., et al., "Chemistry of Naturally Occurring Polyamines. II. Unsaturated Spermidine and Spermine Derivatives," J. ORG. CHEM., (1987) 52:5044-6.	
	CX	Ganem, B., et al., "Chemistry of Naturally Occuring Polyamines. 10. Nonmetabolizable Derivatives of Spermine and Spermidine," J. ORG. CHEM., (1986) 51:4856-61.	
	CY	Goodnow, Jr. R.A., et al., "Oligomer Synthesis and DNA/RNA Recognition Properties of a Novel Oligonucleotide Backbone Analog: Glucopyranosyl Nuclei Amide (GNA)," TETRAHEDRON LETT., (1997) 38(18):3199-3202.	
	CZ	Goodnow, Jr., R.A., et al., "Synthesis of Thymine, Cytosine, Adenine, and Guanine Containing N-Fmoc Protected Amino Acids: Building Blocks for Construction of Novel Oligonucleotide Backbone Analogs," TETRAHEDRON LETT., (1997) 38(18):3195-8.	
	CA1	Gordon, D.W., et al., "Reductive Alkylation on a Solid Phase: Synthesis of a Piperazinedione Combinatorial Library," BIOORG. MED. CHEM. LETT., (1995) 5(1): 47-50.	
	CB1	Gordon, E.M., et al., "Applications of Combinatorial Technologies to Drug Discovery Combinatorial Organic Synthesis, Library Screening Strategies, and Future Directions," J. MED. CHEM., (1994) 37(10): 1385-1401.	
	CC1	Ha, H.C. et al., "The Role of Polyamine Catabolism in Polyamine Analogue-Induced Programmed Cell Death," PROC. NATL. ACAD. SCI., (1997) 94:11557-62.	
	CD1	Han, H. et al., "Liquid-Phase Combinatorial Synthesis," PROC. NATL. ACAD. SCI. USA, (1995) 92:6419-23.	
	CE1	Hanuske-Abel, H.M. et al., "Detection of a Sub-Set of Polysomal mRNAs Associated with Modulation of Hypusine Formation at the G1-S Boundary Proposal of a Role for eIF-5A in onset of DNA Replication," FEBS LETT., (1995) 366:92-8.	
	CF1	Hernandez, A.S. et al., "Solid-Supported tert-Alkoxyacylation Reagents for Anchoring of Amines During Solid Phase Organic Synthesis," J. ORG. CHEM., (1997) 62:3153-7.	
	CG1	Iwanowicz, E.J. et al., "Preparation of N,N'- Bis-tert-Butoxycarbonylthiourea," SYNTHETIC COMM., (1993) 23(10): 1443-5.	
	CH1	Janda, K.D. et al., "Combinatorial Chemistry: A Liquid-Phase Approach," METH. ENZYMOL., (1996) 267:234-47.	
	CI1	Jasnis, M.A. et al., "Polyamines Prevent DFMO-Mediated Inhibition of Angiogenesis," CANCER LETT., (1994) 79:39-43.	
Examiner Signature		Date Considered	



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CJ1	Kremmer, T. et al., "Comparative Studies on the Polyamine Metabolism and DFMO Treatment of MCF-7 and MDA-MB-231 Breast Cancer Cell Lines and Xenografts," <i>ANTICANCER RES.</i> , (1991) 11:1807-14.	
CK1	Laguzza, B.C., et al., "A New Protecting Group For Amines. Synthesis of Anticapsin from L-Tyrosine," <i>TETRAHED. LETT.</i> , (1981) 22(16):1483-6.	
CL1	Lakanen, J.R., et al., "α-Methyl Polyamines: Metabolically Stable Spermidine and Spermine Mimics Capable of Supporting Growth in Cells Depleted of Polyamines," <i>J. MED. CHEM.</i> , (1992) 35:724-34.	
CM1	Lam, K.S., "Application of Combinatorial Library Methods in Cancer Research and Drug Discovery," <i>ANTI-CANCER DRUG DES.</i> , (1997) 12:145-67.	
CN1	Lee, J., "Facile Preparation of Cyclopropylamines from Carboxamides," <i>J. ORG. CHEM.</i> , (1997) 62:1584-5.	
CO1	Li, Y. et al., "Synthesis and Antitumor Evaluation of a Highly Potent Cytotoxic DNA Cross-Linking Polyamine Analogue, 1, 12-Diaziridinyl-4, 9-diazadodecane," <i>J. MED. CHEM.</i> , (1996) 39:339-41.	
CP1	Lloyd-Williams, P., "Convergent Solid-Phase Peptide Synthesis," <i>TETRAHEDRON</i> , (1993) 49(48): 11065-133.	
CQ1	Maillard, L., et al., "Percutaneous Delivery of the Gax Gene Inhibits Vessel Stenosis in a rabbit Model of Balloon Angioplasty," <i>CARDIOVASC. RES.</i> , (1997) 35:536-46.	
CR1	Marton, L.J., et al., "Polyamines as Targets for Therapeutic Intervention," <i>ANNU. REV. PHARMACOL. TOXICOL.</i> , (1995) 35:55-91.	
CS1	Muramoto, K., "Preparation and Characterization of Photoactivable Heterobifunctional Fluorescent Reagents," <i>AGRIC. BIOL. CHEM.</i> , (1984) 48 (11), 2695-9.	
CT1	Nakaoka, T., et al., "Inhibition of Rat Vascular Smooth Muscle Proliferation In Vitro and In Vivo by Bone Morphogenetic Protein-2," <i>J. CLIN. INVEST.</i> , (1997) 100 (11): 2824-32.	
CU1	Pfitzner, K.E., et al., "Sulfoxide-Carbodiimide Reactions. I. A Facile Oxidation of Alcohols," <i>J. AM. CHEM. SOC.</i> , (1965) 87(24): 5661-9.	
CV1	Quemener, V., et al., "Polyamine Deprivation: A New Tool in Cancer Treatment," <i>ANTICANCER RES.</i> , (1994) 14:443-8.	
CW1	Raines, D.E., et al., "Potential-Dependent Phase Partitioning of Fluorescent Hydrophobic Ions in Phospholipid Vesicles," <i>J. MEMBRANE BIOL.</i> , (1984) 82:241-7.	
CX1	Rajeev, K.G., et al., "Conformationally Restrained Chiral Analogues of Spermine: Chemical Synthesis and Improvements in DNA Triplex Stability," <i>J. ORG. CHEM.</i> , (1997) 62:5169-73.	
CY1	Ranganathan, R.S., et al., "Novel Analogs of Nucleoside 3',5'-Cyclic Phosphates. I. 5'-Mono- and Dimethyl Analogs of Adenosine 3', 5'-Cyclic Phosphate," <i>J. ORG. CHEM.</i> , (1974) 39(3):290-8.	
CZ1	Rink, H., "Solid-phase synthesis of Protected Peptide Fragments Using A Trialkoxy-Diphenyl-Methylester Resin," <i>TETRAHED. LETT.</i> , (1987) 28(33): 3787-90.	
CA2	Salemme, F.R., et al., "Serendipity Meets Precision: The Integration of Structure-Based Drug Design and Combinatorial Chemistry for Efficient Drug Discovery," <i>STRUCTURE</i> , (1997) 5(3):319-24.	
CB2	Sasaki, Y. et al., "Solid-Phase Synthesis and Biological Properties of Ψ[CH <sub>2</sub> NH] Pseudopeptide Analogues of a Highly Potent Somatostatin Octapeptide," <i>J. MED. CHEM.</i> , (1987) 30(7):1162-6.	
CC2	Schallenberg, E.E., et al., "Ethyl Thioltrifluoroacetate As An Acetylating agent with Particular Reference to Peptide Synthesis," <i>J. AM. CHEM. SOC.</i> , (1955) 77:2779-83.	
CD2	Seiler, N. et al., "Polyamine transport in Mammalian Cells. An Update," <i>INT. J. BIOCHEM. CELL BIOL.</i> , (1996) 28(8): 843-61.	
CE2	Seiler, N. et al., "Polyamine Transport In Mammalian Cells," <i>INT. J. BIOCHEM.</i> , (1990) 22(3):211-8.	

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CF2	Shyng, S.-L., et al., "Depletion of Interacellular Polyamines Relieves Inward Rectification of Potassium Channels," PROC. NATL. ACAD. SCI. USA, (1996) 93:12014-9.	
CG2	Siegel, M.G. et al., "Rapid Purification of Small Molecule Libraries by Ion Exchange Chromatography," TETRAHEDRON LETT., (1997) 389(19): 3357-60.	
CH2	Singh, S. et al., "Characterization of Simian Malarial Parasite (Plasmodium Knowlesi) -induced Putrescine Transport in Rhesus Monkey Erythrocytes," J. BIOL. CHEM., (1997) 272(21): 13506-11.	
CI2	Thompson, L.A. et al., "Straightforward and General Method for Coupling Alcohols to Solid Supports," TETRAHED. LETT., (1994) 35:9333-6.	
CJ2	Ventura, C. et al., "Polyamine Effects on [Ca <sup>2+</sup> ] 1 Homeostasis and Contractility in Isolated Rat Ventricular Cardiomyocytes," AM. J. PHYSIOL., (1994) 267:H587-H592.	
CK2	Wang, S.-S., "p-Alkoxybenzyl Alcohol Resin and p-Alkoxybenzyloxycarbonylhydrazide Resin for Solid Phase Synthesis of Protected Peptide Fragments," J. AM. CHEM. SOC., (1973) 95(4): 1128-1333.	

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